

Remarks

Applicants acknowledge receipt of the Final Rejection mailed November 13, 2009 in connection with the above-identified application. This response is being filed within two months of the mailing date of the Final Rejection.

Applicants propose amending claims 25 and 42 – the independent claims – to recite that the plasticizing fluid(s) is (are) a supercritical fluid, and that only supercritical fluids are used in the plasticizing step (step (c) in claim 25 and step (b) in claim 42). These amendments are supported in the specification at page 7, lines 20-22, and page 11, lines 13-18. Applicants respectfully request entry of these amendments as they will place the application in condition for allowance.

Claims 25-26, 32-33, 37, 39-40, 42, 45, 48-49, 53, and 55-56 are pending and under consideration. Claims 28, 30-31, 34-36, 38, 41, 44, 46-47, 50-52, 54, 57-59 have been withdrawn from consideration.

The Examiner's withdrawal of the rejections under 35 U.S.C. § 112 is acknowledged with appreciation.

Rejections Under 35 U.S.C. § 103

The Examiner has rejected claims 25, 32-33, 37, and 39-40 under 35 U.S.C. § 103(a) as allegedly unpatentable over Perman, et al., U.S. Patent No. 5,340,614 ("Perman"). Claims 25-26, 42-43, 45, 48-49, 53, and 55-56 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Perman in view of Colombo, et al., U.S. Patent No. 6,913,779 ("Colombo").

Applicants respectfully traverse both of the obviousness rejections.

The claimed process, if amended as requested by applicants, would require the following steps:

- (a) providing a deposit of deposition matter at the surface, or fluid phase deposition of discrete particles, or dissolved deposition matter by immersion or spraying of solid state polymer substrate with a solution, dispersion or suspension of deposition matter;
- (b) drying by freezing, evaporation, heating or blotting;
- (c) contacting the surface deposited polymer with a plasticizing fluid or a mixture of plasticizing fluids under plasticizing conditions to plasticize and/or swell the polymer and internally distribute deposition matter; and
- (d) releasing the plasticizing fluid or fluids to obtain polymer composite.

The plasticizing fluid is a supercritical fluid, and only supercritical fluids are used in the plasticizing step (step (c) in claim 25 and step (b) in claim 42). That is, solvents which are not supercritical fluids are not used in the plasticizing step.

Perman, by contrast, explicitly teaches that when the polymer is contacted with a supercritical fluid, it must also be simultaneously contacted with “a carrier liquid” (col. 2, lines 28-35). The carrier liquid is not a supercritical fluid (col. 8, lines 28-31), and can be selected from the group consisting of water, methanol, ethanol, hexane, and combinations thereof (col. 9, lines 1-14). Thus, Perman requires the use of at least a two component, two phase system (where one component is a supercritical fluid and one is a liquid) for the plasticizing step, and indicates that the use of this multicomponent, multiphase system was critical to achieving the best polymer impregnation results.

Perman, therefore, teaches a person of skill in the art that a multicomponent, multiphase system is required to achieve the desired impregnation results.

Applicants have found, however, that performing the process steps in the order set forth in the claims allows successful impregnation without the use of a non-supercritical fluid during the plasticization step. Such a result was completely unexpected in view of Perman's teachings. Moreover, by omitting the use of a second solvent in the plasticizing step, the presently claimed process is very improved over Perman's process. For example, by omitting the use of second solvent, the presently claimed process avoids problems with solvent residues and toxicity in the final product. Moreover, in the presently claimed process, there is no need to balance the compatibility of the supercritical fluid and the second, non-supercritical fluid solvent.

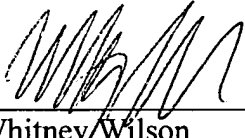
Because nothing in Perman teaches or suggests the possibility of not using a multiphase system for the plasticizing step, Applicants respectfully submit that the presently claimed invention would not have been obvious over Perman, either alone or in combination with Colombo. Therefore, Applicants respectfully request reconsideration and withdrawal of the obviousness rejections.

Conclusion

It is believed that the present application is in condition for allowance, and prompt notice to that effect is earnestly solicited. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, she is invited to telephone the undersigned at the number provided.

Respectfully submitted,
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